Kristen Marie Johnson

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East Lansing, MI 48824   kristenj@msu.edu
Room 2132

RESEARCH INTERESTS	My research focuses on the development of machine learning and natural language processing models for solving computational political science and social computing tasks. Specifically, my work abstracts lexical, social, and behavioral features of political discourse on social media microblogs to predict real-world behaviors including ideological stance, moral foundations, and framing strategies among politicians. Currently advised projects extend my behavioral modeling approach for applications in the social science domains of politics, psychology, public policy, finance, law, social justice, and education.

EDUCATION

Ph.D. in Computer Science — August 2019
Purdue University, West Lafayette, IN
Dissertation: Modeling Language, Social, and Behavioral Abstractions
for Microblog Political Discourse Classification
Advisor: Dr. Dan Goldwasser

Master of Science in Computer Science — May 2012
University of New Orleans, New Orleans, LA — GPA: 3.9
Thesis: Software for Estimation of Human Transcriptome
Isoform Expression Using RNA-Seq Data
Advisor: Dr. Dongxiao Zhu

Bachelor of Science in Psychology — May 2007
University of New Orleans, New Orleans, LA — GPA: 3.9
Magna Cum Laude

PUBLICATIONS

CLoSE: Contrastive Learning of Subframe Embeddings for Political Bias Classification of News Media. M. Kim and **K. Johnson**.
To appear in *COLING, 29th International Conference on Computational Linguistics*, 2022.

Cryptocurrency Day Trading and Framing Prediction in Microblog Discourse.
A. Pawlicka Maule and **K. Johnson**.
In Proc. *Third Workshop on Economics and Natural Language Processing (EcoNLP, in conjunction with EMNLP'21)*, 2021.

Using Social Media For Bitcoin Day Trading Behavior Prediction.
A. Pawlicka Maule and **K. Johnson**.
In Proc. *Fourth Workshop for Widening NLP (WiNLP, in conjunction with ACL'20)*, 2020.
[Link]

Modeling Language, Social, and Behavioral Abstractions for Microblog Political Discourse Classification. **K. Johnson**.
Purdue University Graduate School Dissertations, 2019. [Link] [PDF]

Modeling Behavioral Aspects of Social Media Discourse for Moral Classification.
K. Johnson and D. Goldwasser.
In Proc. *Third Workshop on NLP and Computational Social Science (NLP+CSS, in conjunction with NAACL'19)*, 2019. [Link] [PDF]

Classification of Moral Foundations in Microblog Political Discourse.
K. Johnson and D. Goldwasser.
In Proc. *56th Annual Meeting of the Association for Computational Linguistics (ACL'18)*, 2018. [Link] [PDF]

Modeling of Policy Frames for Morality Detection on Twitter.
K. Johnson and D. Goldwasser.
In Proc. *Second Workshop on Women and Underrepresented Minorities in NLP (WiNLP, in conjunction with NAACL'18)*, 2018. [Link]

Leveraging Behavioral and Social Information for Weakly Supervised Collective Classification of Political Discourse on Twitter.
K. Johnson, D. Jin, and D. Goldwasser.
In Proc. *55th Annual Meeting of the Association for Computational Linguistics (ACL'17)*, 2017. [Link] [Talk] [PDF]

Ideological Phrase Indicators for Classification of Political Discourse Framing on Twitter.
K. Johnson, I. Lee, and D. Goldwasser.
In Proc. *Second Workshop on NLP and Computational Social Science (NLP+CSS, in conjunction with ACL'17)*, 2017. [Link] [PDF]

Modeling of Political Discourse on Twitter.
K. Johnson and D. Goldwasser.
In Proc. *First Workshop on Women and Underrepresented Minorities in NLP (WiNLP, in conjunction with ACL'17)*, 2017.

PurdueNLP at SemEval-2017 Task 1: Predicting Semantic Textual Similarity with Paraphrase and Event Embeddings.
I. Lee, M. Goindani, C. Li, D. Jin, **K. Johnson** X. Zhang, M. Pacheco, D. Goldwasser.
In Proc. *11th International Workshop on Semantic Evaluation (SemEval-2017, in conjunction with ACL'17)*, 2017. [Link] [PDF]

Modeling of Political Discourse Framing on Twitter.
K. Johnson, D. Jin, and D. Goldwasser.
In Proc. *11th International AAAI Conference on Web and Social Media (ICWSM-17)*, 2017. [Link] [PDF]

"All I know about politics is what I read in Twitter": Weakly Supervised Models for Extracting Politicians' Stances from Twitter.
K. Johnson and D. Goldwasser.
In Proc. *COLING 2016, 26th International Conference on Computational Linguistics*, 2016. [Link] [PDF]

Identifying Stance by Analyzing Political Discourse on Twitter.
K. Johnson and D. Goldwasser.
In Proc. *First Workshop on NLP and Computational Social Science (NLP+CSS, in conjunction with EMNLP'16)*, 2016. [Link] [PDF]

Software for Estimation of Human Transcriptome Isoform Expression Using RNA-Seq Data.
K. Johnson.
University of New Orleans Theses and Dissertations, 2012. [Link] [PDF]

SPATA: A Seeding and Patching Algorithm for De-Novo Transcriptome Assembly.
Z. Zhao, T. Nguyen, N. Deng, **K. Johnson**, and D. Zhu.
IEEE International Conference on Bioinformatics and Biomedicine Workshops (BIBM), 2011. [Link]

Isoform-Level microRNA-155 Target Prediction Using RNA-Seq.
N. Deng, A. Puetter, K. Zhang, **K. Johnson**, Z. Zhao, C. Taylor, E. Flemington, and D. Zhu.
Nucleic Acids Research, 39(9), 2011. [Link] [PDF]

INVITED **TALKS** **AND** **PANELS**	Panel: Women in Technology. *Novi High School Chapter of Girls Who Code*, March 2022. Modeling and Understanding Framing in Microblog Political Discourse. *Colloquium on Narrative Framing and Its Linguistic Forms in Online Media,* *Communication in Multicultural Society Conference (CMSC)*, Dec. 2020. Panels: Graduate School Advice and Careers in Academia and Industry. *ACL Mentoring Panels*, July 2020. Modeling of Language, Social, and Behavioral Abstractions for Microblog Political Discourse Classification. *Graduate Seminar, Wayne State University*, Sept. 2020. *Practical Data Science with Applications in Industry, INFORMS Annual Meeting*, Oct. 2019. Natural Language Processing Methods for Extracting Political Behavior from Twitter. *Midwest Speech and Language Days and Midwest Computational Linguistics Colloquium*, 2016.

RESEARCH

Assistant Professor   *August 2019 to Present*
GenCen Consulting and   **Michigan State University**
GJEC Associated Faculty
Dept. of Computer Science and
Engineering
My current research aims to expand my abstraction modeling techniques for other social science applications, including studying politics over time, social justice, legislation, and their associated real-world repercussions. I am also exploring new ways to model microblog discourse for financial and sociological domains. In addition to research, I teach the graduate level Natural Language Processing course and undergraduate Introduction to Machine Learning course.

Research Assistant   *May 2015 to July 2019*
Dr. Dan Goldwasser, Purdue NLP Group   Purdue University
My research with Professor Goldwasser explored the analysis of political discourse and its impacts on real-world behavior. Using Probabilistic Soft Logic (PSL), I modeled the language, social behaviors, and framing strategies of politicians and political groups on Twitter to predict real-world political actions and analyze trends around political and social events.

Research Assistant   *August 2012 to May 2014*
Dr. Daisuke Kihara   Purdue University
As a member of Professor Kihara's group, I wrote software for the analysis of coevolution, mutual information, and entropy among multiple sequence alignments of protein families. I also designed software for the removal of noise from electron microscopy data.

Research Assistant   *May 2010 to May 2012*
Dr. Dongxiao Zhu and Dr. Zhiyu Zhao   University of New Orleans
My research with Professor Zhu focused on development of the software packages: GWIE, iGWIE, and ChromIE. This software was a global extension of our group's novel EM-like algorithm to allow genome-wide isoform level estimation of the human transcriptome from RNA-Seq data. Our work was performed in collaboration with Children's Hospital and Tulane University of New Orleans, LA. I also worked in collaboration with Dr. Zhao to develop and test software for de-novo transcriptome assembly and protein docking.

TEACHING	**Assistant Professor**	**Michigan State University**

CSE 404: Introduction to Machine Learning
CSE 842: Natural Language Processing

	Graduate Teaching Assistant	**Purdue University**
	CS 590-NLP: Machine Learning Methods for NLP	January 2016 to May 2016
	CS 240: Programming in C	June 2014 to August 2014
	CS 565: Programming Languages	January 2014 to May 2014
	CS 180: Introduction to Object Oriented Programming	August 2013 to December 2013

MENTORING	MSU Professorial Assistant Advisor	Fall 2022
	EMNLP Mentoring Program	November 2021
	EMNLP Computational Social Science Birds of a Feather	November 2021
	ACL Diversity & Inclusion Mentor	July 2020
	NAACL Big Sibling Mentor	June 2019
	Purdue Women in Science Programs (WISP)	August 2015 to March 2017

SERVICE

Area Chair
Conference on Empirical Methods in Natural Language Processing (EMNLP) 2021

Social Media and Sponsorships Co-chair
Widening Natural Language Processing Workshop (WiNLP) 2019

Local Sponsorships and Exhibits Chair
North American Chapter of the Association for Computational Linguistics:
Human Language Technologies (NAACL) 2018

Conference Reviewer

ACL Rolling Review Member	2021-2022
North American Chapter of the Association for Computational Linguistics (NAACL)	2021
European Chapter of the ACL (EACL)	2021
The SIGNLL Conference on Computational Natural Language Learning (CoNLL)	2021 - 2022
AAAI Conference on Artificial Intelligence (AAAI)	2019 - 2022
Annual Meeting of the Association for Computational Linguistics (ACL)	2018 - 2020
Conference on Empirical Methods in Natural Language Processing (EMNLP)	2018 - 2022

Workshop Reviewer

Workshop on NLP and Computational Social Science (NLP+CSS)	2017 - 2022
Workshop on Noisy User-generated Text (W-NUT)	2018 - 2022

Journal Reviewer
Journal of Artificial Intelligence Research (JAIR) 2020

MSU Department of Computer Science and Engineering
Graduate Studies and Research Committee Member 2019 - 2022

AWARDS

Travel Grants

Widening Natural Language Processing Workshop (WiNLP)	2018
International AAAI Conference on Web and Social Media (ICWSM)	2017
Workshop on NLP and Computational Social Science (NLP+CSS)	2016, 2019
Purdue University Women in Science Programs (WISP)	2016

MEDIA COVERAGE

Cryptocurrency Day Trading Prediction.
Wealth Simple Magazine. Spring 2022.

Artificial Intelligence.
Insights Magazine. Tim Brouk. Spring 2017.

Politicians on Twitter: What Can You Make of It?
Purdue Policy Research Institute (PPRI).